

### Abstract of the Invention

The invention is directed to a chemical composition that can be used to clean, etch and dissolve single crystals of the Group IIA metal fluorides (the fluorides of magnesium, calcium, barium and strontium). The composition according to the invention is an aqueous solution of a mineral acid and a fluoride ion sequestering agent. The invention is further directed to a method of making Group IIA metal fluoride single crystals using seed crystals that has been cleaned and/or etched using the composition of the invention.